UNIVERSITY of BRADFORD

Module Descriptor

Advanced Topics in Chemistry: Bio-inorganic Chemistry

Module Code:	CFS7002-A
Academic Year:	2018-19
Credit Rating:	10
School:	School of Chemistry and Biosciences
Subject Area:	Chemistry and Forensic Science (ceases 2016)
FHEQ Level:	FHEQ Level 7 (Masters)
Module Leader:	Dr Sanjit Nayak

Additional Tutors:
Dr Nicolas Barry

Pre-requisites:

Co-requisites:

Contact Hours

Type	Hours
Lectures	10
Tutorials	8
Directed Study	80.5
Examinations DO NOT USE	1.5

Availability Periods

Occurrence	Location/Period
BDA	University of Bradford / Semester 2 (Feb - May)

Module Aims

To establish the role of metal compounds in nature and their application in medicine.

Outline Syllabus

(1) Survey of trace metals; structure of proteins; active sites in enzymes and binding sites of some biomolecules; the uptake, transport and storage of relevant metal ions; catalysis and the entatic state.

(2) Non-redox metalloenzymes including carboxypeptidase A, carbonic anhydrase and alcohol dehydrogenases; metals in biological redox reactions; factors in metal redox chemistry. Redox metalloenzymes including cytochromes, oxidases, peroxidases, catalase and vitamin B12.
(3) Oxygen carriers and oxygen transport proteins; nitrogen fixation; chemistry of dinitrogen metal complexes; regulatory and trigger roles of metal ions. Metal ion regulation in extreme environments, extremophiles, exo-biology, inorganic origins of life.
(4) Metals in medicine; heavy and precious metal ion complexes in chemotherapy; chelation therapy for metal ion overload; magnetic resonance imaging agents.

Module Learning Outcomes

On successful completion of this module, students will be able to...

1 1. explain the key roles of metals and metal ions in nature and medicine.

2 2. a) give the chemical basis for the role of metal ions in nature;
b) distinguish between redox and non-redox metallo-enzymes;
c) describe the implications of the metal ion coordination chemistry of oxygen and nitrogen;
d) critically review an appropriate aspect of current scientific development.

3 3. show evidence of having developed your personal, professional and study skills in managing learning outcomes, including the sourcing and critically reviewing of information, the preparation of a dissertative review.

Learning, Teaching and Assessment Strategy

Lectures and tutorials.

Mode of Assessment

Type	Method	Description	Length	Weighting	Final Assess'
Summative	Examination - closed book	1.5 hour closed book examination	1.5 hours	70%	No
Summative	Coursework	Critical review (1000 words)	0 hours	30%	No

Legacy Code (if applicable)

CT-4008M

Reading List

To view Reading List, please go to **rebus:list**.